



# engineering news

School of Engineering

SUMMER 15

## SANTA CLARA UNIVERSITY

### DEAN'S MESSAGE

"With a diverse skill set in mobile application development, bioengineering, and entrepreneurship, I am a third year student at Santa Clara University with a strong interest in innovative health technologies found at the convergence of computer science and medicine." This is the LinkedIn profile of bioengineering major Riley Parsons '16 who, along with a teammate from the business school, recently won the Grand Prize in a Business Plan Pitch Competition for an iPhone app incorporating sophisticated features and algorithms to help college students buy and sell used items. Remember, *these are bioengineering and business undergraduates.*

This is just one example of the fluidity across disciplines happening on campus today as students are exploring fields outside of their chosen majors. Coding is no longer strictly the domain of computer engineering—everyone is doing it. And students from a wide range of disciplines are discovering the thrill of stretching their technical and artistic creativity through the development and use of drones.

Engineering education is undergoing a renaissance, and we are constantly striving to provide an environment in which students can learn in structured and non-structured ways. This summer our Frugal Innovation Lab, Maker Lab, and Robotics Systems Laboratory—all bastions of interdisciplinary convergence—have moved into bigger, better spaces. We're moving upward and onward, expanding students' opportunities. It's an exciting time for engineering at SCU!

Godfrey Mungal  
Dean  
School of Engineering

Photo: SCU Energy Club



Members of Santa Clara's Energy Club team up with GRID Alternatives to install a residential solar system for a lucky homeowner.

### A Bright Opportunity

*The following was written by Claudia Chen '15 M.S. Sustainable Energy, past president and co-founder of SCU's Energy Club.*

On a brisk April morning, SCU engineering students gathered on the driveway of an unassuming one-story home in a quiet San Jose neighborhood, ready to tackle a rooftop solar installation. The homeowner and his daughter looked on excitedly as the group went through a safety orientation and began unloading a trailer full of tools and equipment. Throughout the day, the two of them peeked in to assess progress, with the homeowner even joining the team on the roof to really get a good look. His seven-year-old daughter proudly told everyone about the solar cell-powered racecar she had made in school the week before.

The Santa Clara students were working with GRID Alternatives, a 501(c)(3) certified non-profit organization that aims to bring solar power to low-income households by training community volunteers to install residential rooftop solar systems—a program that underscores the triple bottom line of people, planet, and employment.

Over the course of two days, the SCU team installed an 8-panel, string inverter, 2.5 kW DC/ 2.4 kW AC system. On the first day, students performed measurements and installed the mounts on the roof—connecting the rails on which the solar panels lay, installing microinverters, starting the conduit run, and doing pre-wiring work. On the second day, the students finished the wiring and conduit run, tested the panels, got the panels to the roof, bonded the panels to the rails on the roof, and made the final system connections and measurements.

The system is projected to save the homeowner \$31,000 over its 30-year lifetime and prevent over 130,000 pounds of greenhouse gas emissions that would be generated by traditional energy sources. An added benefit is the valuable hands-on training the SCU engineering students received. The experience not only offered volunteers an inside look within the solar industry, but is an excellent resume-booster as well. The opportunity was coordinated by the Santa Clara University Energy Club. For more details or to be added to the mailing list for future events, contact [scuenergyclub@gmail.com](mailto:scuenergyclub@gmail.com).

# A few numbers for you...

- 1(x2)** First Place in the Intel Security IoT Hackathon 2015 was claimed by a team of three Bronco engineering undergraduates, and First Prize in the DeveloperWeek Hackathon went to three SCU School of Engineering alumni for their iOS messaging app
- 1.4** Million dollar funding from the Kern Family Foundation received in 2015 supports undergraduate innovation and entrepreneurship education
- 3** Third Place in the Associated Schools of Construction Design-Build completion went to a team of seven civil engineering undergraduates
- 11** Courses in Design Thinking promote an entrepreneurial mindset in engineering undergraduates
- 19** Student organizations fuel students' passion for engineering through social activities, competitions, educational opportunities, outreach, service, and travel
- 24** Graduate students earned their Master's degree in Sustainable Energy this year
- 24.5** Percent of our undergraduate population is female—well above the national average of 19 percent—and our graduate female pop is 37 percent!
- 71** Classes were offered by the Department of Applied Mathematics in 2014-15 in support of advanced engineering study

- 75** Students, TAs, faculty, and industry partners perform research in the Center for Nanostructures
- 238** Square feet is the estimated size of the solar-powered Tiny House being designed and built for a 2016 competition against fellow California university and college teams
- 260** Terabytes of disk space are available on the School of Engineering's new Hadoop Cluster, used for courses in web information management, big data, and cloud computing
- 455** El Camino Real, Santa Clara, CA, is the new address for the School of Engineering's Frugal Innovation Lab, Maker Lab, and Robotics Systems Laboratory—Guadalupe Hall is a great new space for these centers of student learning
- 485** Graduate students are currently enrolled in the computer engineering master's program, up 65 percent over last year
- 600** Students, faculty, and staff are certified to use the Maker Lab for easy-access, hands-on prototyping
- 1,745+** Prospective students and friends from 13 countries toured the School of Engineering this year



## Ph.D. Students by Department

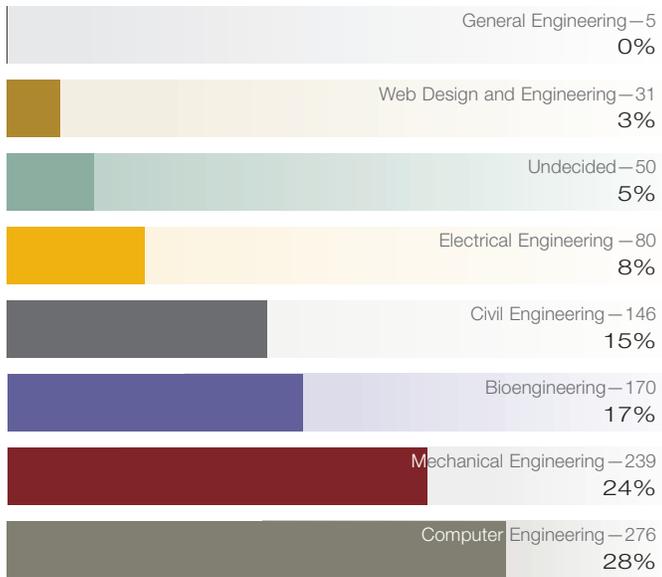
2014–2015

(56 total reflects currently enrolled students only)

- 9** Mechanical Engineering
- 22** Electrical Engineering
- 25** Computer Engineering



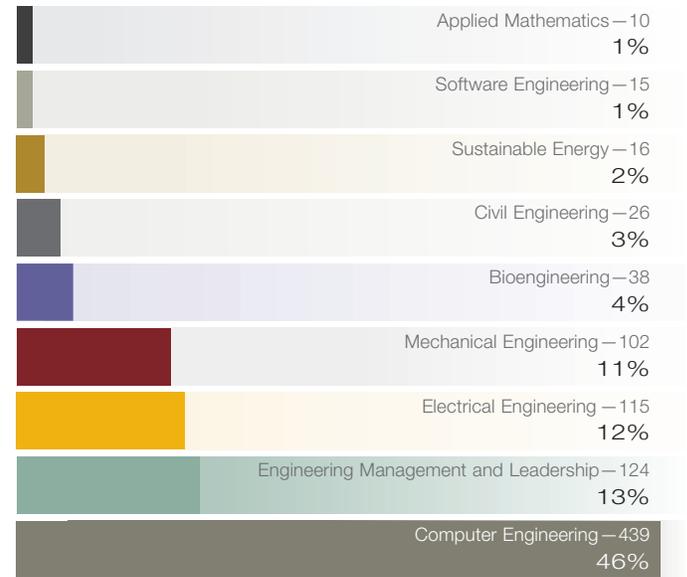
## Undergraduate Enrollment 2015



**Total\*—997, 100%**

\*Female – 244, 24%

## Graduate Enrollment 2015



**Total\*—885, 100%**

\*Excludes certificate and open university; reflects currently enrolled students only

## 2014 Degrees Conferred—559



Bachelor of Science  
195



Engineer's Degree  
1



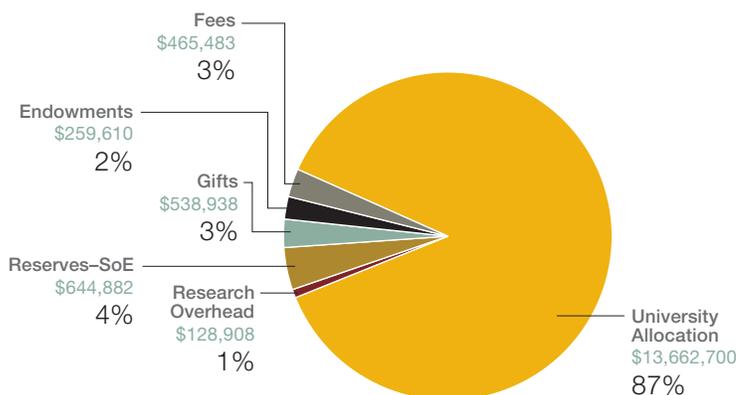
Master of Science  
359



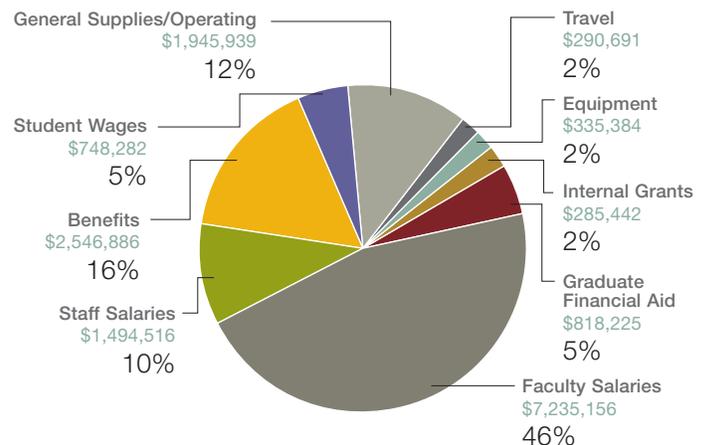
Doctor of Philosophy  
4

## Revenue and Expenses

FY 2013–14 Revenue Sources—\$15,700,521



FY 2013–14 Expense Categories—\$15,700,521





Santa Clara University  
500 El Camino Real  
Santa Clara, CA 95053

Nonprofit  
Organization  
US Postal  
PAID  
Permit No. 22  
Santa Clara, CA

The Jesuit University in Silicon Valley



## The Experience(s) of a Lifetime

College is meant to be a transformative experience. And if you think of all the elements that comprise that whirlwind—the courses, cramming and keggers, friendships forged, lessons learned, and independence instituted—it might be difficult to pin down just a handful of components that are most influential when it comes to success in the real world, but a recent study set out to do just that. Researchers from Gallup, Purdue University, and the Lumina Foundation randomly surveyed more than 29,000 nationally representative bachelor degree holders to find connections between undergraduate experience and current engagement in work and community, physical, financial, and social well-being. Their findings are shown at the right.

Santa Clara engineering, with its Jesuit tradition of educating the whole person, is firing on all cylinders here. Our professors know students by name and advise them individually through a yearlong capstone project and abundant research projects. With a stellar Career Center (80.8% of engineering undergrads from the Class of 2014 held one or more internship during their time with us), 19 student organizations in engineering alone, and scores of clubs and service opportunities available on campus, Bronco engineers leave SCU well prepared for success.

**These six experiences play a significant role in contributing to post-college success:**

- 1. A professor who made them excited to learn**
- 2. A professor who cared about them as individuals**
- 3. A mentor who pushed students to reach their goals**
- 4. Working on a long-term project**
- 5. Completing a job or internship related to classroom lessons**
- 6. Being engaged in extracurricular activities and group**